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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/050,725	01/15/2002	Scott Wade Powell	7090-1-CIP	8845
22442	7590	12/13/2005	EXAMINER	
SHERIDAN ROSS PC 1560 BROADWAY SUITE 1200 DENVER, CO 80202			ZHENG, LOIS L	
			ART UNIT	PAPER NUMBER
			1742	

DATE MAILED: 12/13/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

# Office Action Summary

Application No.

10/050,725

Applicant(s)

POWELL, SCOTT WADE

Examiner

Lois Zheng

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☒ Responsive to communication(s) filed on 28 September 2005.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 1-4, 6-14 and 16-20 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-4, 6-14 and 16-20 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

## Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

## Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date 7/14/05, 5/31/05.
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_.

## **DETAILED ACTION**

### ***Status of Claims***

1. Claims 1 and 11 are amended in view of the amendment filed 28 September 2005. Claims 5 and 15 are canceled in view of the amendment. Therefore, claims 1-4, 6-14 and 16-20 are currently under examination.

### ***Means-Plus-Function Language***

2. Instant claim 11 contain the flowing terms written in means-plus-function format, and have been interpreted as follows:

“means for interconnecting said plurality of reaction plates to said source of DC power” (claim 11) is in proper means-plus-function format and is defined as reaction plate tabs as described in page 38 lines 1-10 of the specification and in Fig. 14 numeral 222.

### ***Claim Rejections - 35 USC § 103***

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 1-4, 6, 8-14, 16 and 18-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Plantes et al. US 4,329,211(Plantes) in view of Operating Instructions Manual, Vortex™ Water Systems, LLC(Vortex™ Operating Manual) and further in view of Allen US 5,571,399(Allen).

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As discussed in paragraph 8 of the previous Non-Final Office Action dated 22 January 2004, Plantes teaches of an electrocoagulation treatment device for treatment of a high volume flow rate of liquid comprising:

- a housing having an upper portion and a lower portion, said upper portion defining a development chamber and said lower portion defining a reaction chamber (Fig. 2 where area of numeral 26 is the upper portion and numeral 20 area is the lower portion);
- an inlet communicating with said housing at said reaction chamber to allow the flow of liquid into said housing (Fig. 2, numeral 16);
- a secondary separation chamber integral with said housing and placed adjacent said upper portion thereof (Fig. 2, numeral 26 and/or 62);
- an outlet communicating with said secondary separation chamber to allow the flow of liquid out of said housing (Fig. 2, numeral 18);
- a plurality of reaction plates disposed in said housing and extending substantially vertical within said reaction chamber, said plurality of reaction plates being spaced apart from one another creating gaps extending continuously between adjacent reaction plates, said flow of liquid being in a flow direction upward through said gaps between said plurality of reaction plates, said reaction plates being consumed over time due to electrocoagulation (Fig. 2, numeral 20 and cols. 2-4);

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- at least two reaction plate tabs integral with selected ones of said plurality of reaction plates, said reaction plate tabs having ends which are isolated from the flow of liquid in said housing (Fig. 2, numeral 22); and
- a source of power providing line voltage to said tabs in order to create an electrical field for the electrocoagulation treatment within said reaction chamber (col. 6, lines 10-19).

However, Plantes does not explicitly teach the claimed less than all of the tabs connected to the DC power source. Plantes also does not teach the amended at least three reaction plate tabs having extensions extending through the lower portion of the housing.

Vortex™ Operating Manual provides proper operating instructions for a Vortex™ water purification system. Vortex™ Operating Manual further discloses a reaction chamber having a housing and a plurality of electrode plates (pages 6, item 10) and the inlet hose to the reaction chamber (page 6, item 9). DC power is used for the Vortex™ water purification system (page 7 paragraph B). Vortex™ Operating Manual further discloses that for high conductivity water, only the first and the last plate in the reaction chamber needs to be connected and for low conductivity water, every plate must be connected. Vortex™ Operating Manual further teaches that one can experiment with the electrical connections for optimal treatment depending on the specific type of the water streams (page 9, Electrical Connection), for example, a water stream with moderate conductivity.

With respect to amended claims 1, 10-11 and 20 of the instant invention, since Plantes teaches using AC power in an electrocoagulator due to high voltage requirement when treating waste water at relatively high volume flow rate, one skilled artisan would have found it obvious to use DC power as taught by the Vortex™ Operating Manual to operate the electrocoagulator of Plantes when treating waste water at lower volume flow rates where high voltage is not required. In addition, one of ordinary skill in the art would have found it obvious to experiment and selectively connect the electrode tabs of Plantes, as taught by the Vortex™ Operating Manual, depending on the type of water streams being treated in order to achieve optimal water treatment as taught by the Vortex™ Operating Manual.

As discussed in paragraph 8 of the previous Non-Final Office Action dated 22 January 2004, Allen teaches reaction plate tabs extending through the lower portion of the housing(Figs. 2 and 4, numerals 21-22 and 16-17).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have modified Plantes in view of the Vortex™ Operating Manual to include tab extensions extending through the lower portion of the housing as taught by Allen(Figs 2 and 4, numerals 16-17 and 21-22) in order to increase versatility in tab connection thereby putting electrical connections out of harms way from operators of the apparatus as taught by Allen(see paragraph 8 of the previous Non-Final Office Action mailed 22 January 1004).

Regarding the amended feature of "at least three reaction plate tabs include corresponding tab extensions that extend through the low portion of the housing" as

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recited in instant claims 1 and 11, since Vortex™ Operating Manual teaches experimenting with the electrical connections for optimal treatment depending on specific water streams and Allen teaches extending tabs through the lower portion of the housing for increased versatility, one skilled artisan would have found the claimed at least three reaction plate tab extensions through the lower portion of the housing within the scope of the teachings of Plantes in view of Vortex™ Operating Manual and Allen.

With respect to claims 2-4, 6 and 8-9 of the instant invention, the rejections are made for the same reason as stated in paragraph 5 of the previous Non-Final Office Action dated 22 January 2004.

With respect to claims 12-14, 16 and 18-19 of the instant invention, the rejections are made for the same reasons as stated in paragraph 8 of the previous Non-Final Office Action dated 22 January 2004.

5. Claims 7 and 17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Plantes in view of Vortex™ Operating Manual and Allen, and further in view of Moeglich US 4,176,038 (Moeglich).

The teachings of Plantes in view of Vortex™ Operating Manual and Allen are discussed in paragraph 4 above. However, Plantes in view of Vortex™ Operating Manual and Allen do not specifically teach the claimed airlet attached to the lower portion to introduce air within said liquid stream thereby increasing turbulence.

Moeglich teaches a water purification apparatus with processing water augmented by air when the processing water is injected into the lower portion of the processing vessel(col. 2 lines 16-39 and col. 4 lines 24-45).

Therefore, it would have been obvious to one of ordinary skill in the art to have introduced air into the water inlet stream of the processing apparatus of Plantes in view of Vortex™ Operating Manual and Allen as taught by Moeglich in order to eliminate the likelihood of bridging and short circuits between the electrodes, and to increase the efficiency of the process as taught by Moeglich(col. 2 lines 20-27).

***Response to Arguments***

6. Applicant's arguments filed 28 September 2005 have been considered but are not persuasive.

In the remarks, applicant argues that using DC power source defeats the teaching of Plantes since the electrocoagulator of Plantes treats water at high volume flow rate. The high volume flow rate limitation in the electrocoagulator of Plantes is related to the manner in which the prior art apparatus was operated. One of ordinary skill in the art would have realized that the apparatus of Plantes could have been operated with a lower volume flow rate and skill perform the same electrocoagulation reaction. When using such a lower volume flow rate, one of ordinary skill in the art would have found it obvious to have used a DC power source as suggested by the Vortex™ Operating Manual.

With respect to applicant's arguments that both Allen and Plantes use an AC voltage which only requires two terminals, the applicant is reminded that the rejection ground is based on the combined teachings of Plantes in view of the Vortex™ Operating Manual and Allen. Therefore, any arguments attacking individual prior art reference instead of combined teaching of the prior art references are not found persuasive. In



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addition, the combined teachings of Plantes in view of the Vortex™ Operating Manual and Allen disclose an electrocoagulator that is structurally the same as the apparatus of the instant invention.

In the remarks, applicant further argues there is no need to combine Allen's teaching into the apparatus of Plants in view of Vortex™ Operating Manual since the electrical connections in the apparatuses of Plantes and the Vortex™ Operating Manual either extend exteriorly of the housing(Plantes) or extend above the housing(Vortex™ Operating Manual), thereby, putting the electrical connections out of harms way. The examiner does not find applicant's argument persuasive since the tab extensions as taught by Plants, Vortex™ Operating Manual and Allen further shows that the tab extensions through any portion of the housing to the exterior of the housing performs the same function, which is putting the electrical connections out of harms way. Therefore, one of ordinary skill in the art would have found it obvious to have extended the electrical connection tabs through the lower portion of the housing with expected success since Plants, Vortex™ Operating Manual and Allen teaches extending electrical connections through any portion of the housing are functionally equivalent.

### ***Conclusion***

7. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Gonzalez US 4,450,060 teaches a bipolar electrolytic cell comprising parallel electrodes wherein two of the end electrodes are connected to the negative terminal of

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the DC power source and the middle electrode is connected to the positive terminal of the DC power source.

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Lois Zheng whose telephone number is (571) 272-1248. The examiner can normally be reached on 8:30am - 5:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Roy King can be reached on (571) 272-1244. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

LLZ

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